Bossier Parish Community College
Master Syllabus

Course Prefix and Number: CHEM 102L **Credit Hours:** 1

Course Title: General Chemistry II Lab

Course Prerequisites: CHEM 101 and current or previous enrollment in CHEM 102

Textbooks: Chemistry Educational Resources Laboratory Handbook
Chemical Education Resources Modular Lab Program in Chemistry

Course Description:

This course is designed to provide the students with fundamental chemistry laboratory skills and knowledge required for a continued study of chemistry and related sciences. The course is designed to reinforce concepts and materials learned in Chemistry 102.

Learning Outcomes:

At the end of the course the student will:

A. demonstrate acceptable and appropriate safety measures in the chemistry laboratory;
B. collect, analyze, and report laboratory data and utilize data into solutions of laboratory problems; and
C. utilize knowledge of chemical principles and laboratory skills and techniques to perform assigned laboratory experiments.

To achieve the learning outcomes, the student will

1. review safety procedures for working in the chemistry lab. (A)
2. determine the solubility of an unknown inorganic salt in water at a various temperature. (C)
3. evaluate the molal freezing point depression constant for water and its dependence on such factors as the nature and concentration of the solute. (C)
4. determine the rate law for the reaction of crystal violet with hydroxide ions in aqueous solution. (C)
5. determine the rate law, activation energy, and collision frequency factor for a chemical reaction and how the rate constant can be altered by the addition of a catalyst. (C)
6. determine the effect of a change in a reaction condition of a chemical system at equilibrium and correlate the observed responses with LeChatelier's principle. (C)
7. determine the total hardness in a water sample by titrating with EDTA solution. (C)

8. compare calculated and measured pH of several solutions, including strong and weak acids. (C)
9. prepare titration curves form collected data and use titration curves and calculations to compare the behavior of strong and weak acids (C)
10. prepare and standardize a NaOH solution to use for the titration of an unknown weak acid and use the titration data to determine the equivalent mass, PK, and identify of the weak acid. (C)
11. determine the formula and Kd of a complex ion through the use of coupled reactions and an understanding of Ksp. (C)
12. measure the solubility of a salt in water at various temperatures in order to calculate the Ksp, Δ G, ΔH, and ΔS for the dissolution of the salt. (C)
13. determine the reduction potentials for three half-reactions form appropriate cell potentials and a selected standard reduction half-reaction. (C)
14. compare predicted and measured potentials of cells constructed from combinations of three half-reactions. (C)
15. prepare laboratory reports which require the utilization and interpretation of laboratory data. (B)

Course Requirements

- minimum of 80% on lab safety quiz
- demonstrated safe practices in the chemistry laboratory
- minimum average of 70% on laboratory reports and quizzes
- minimum average of 70% on the mid-term and final practical tests
- satisfactorily perform a minimum of 10 assigned laboratory experiments

Course Grading Scale:

A- 90% or more of total possible points on pre-lab quizzes and laboratory reports and a minimum of 80% on the lab safety quiz and a minimum of 70% average on the mid-term and final practical tests and safely performing a minimum of 10 assigned laboratory experiments

B- 80% or more of total possible points on pre-lab quizzes and laboratory reports and a minimum of 80% on the lab safety quiz and a minimum of 70% average on the mid-term and final practical tests and safely performing a minimum of 10 assigned laboratory experiments

C- 70% or more of total possible points on pre-lab quizzes and laboratory reports and a minimum of 80% on the lab safety quiz and a minimum of 70% average on the mid-term and final practical tests and safely performing a minimum of 10 assigned laboratory experiments

D- 60% or more of total possible points on pre-lab quizzes and laboratory reports and a minimum of 80% on the lab safety quiz and a minimum of 60% average on the

mid-term and final practical tests and safely performing a minimum of 10 assigned laboratory experiments

F- less than 60% of total possible points on pre-lab quizzes and laboratory reports or less than 80% on the lab safety quiz or less than 60% average on the mid-term and final practical tests or failure to safely perform at least 10 assigned laboratory experiments.

Reviewed by D. Hoston / May 2009